H. W. CAMPBELL.

GRAIN SHOE.

APPLICATION FILED FEB. 28, 1918.

1,416,331. Patented May 16, 1922.

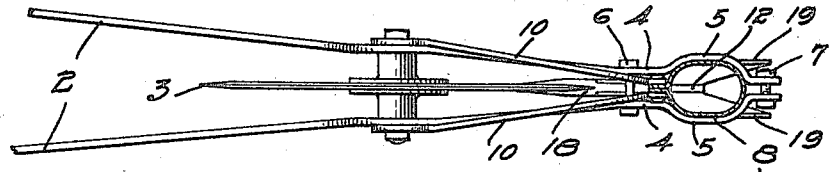


FIG. 2.

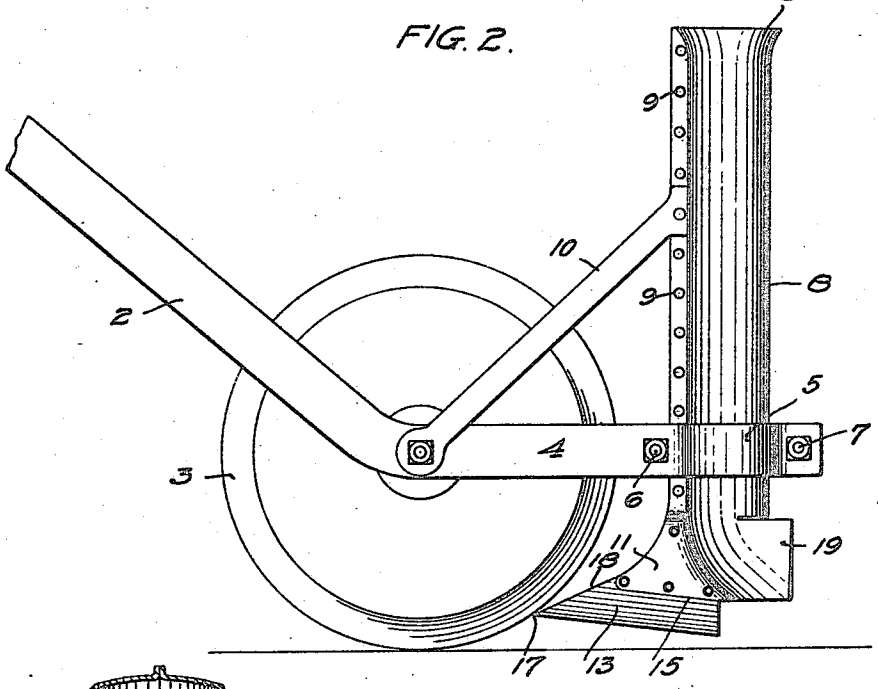


FIG. 1.

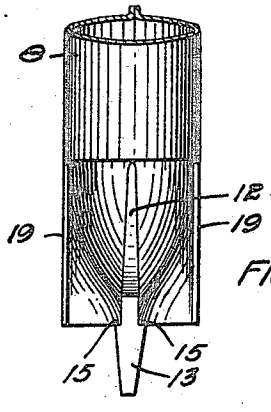


FIG. 3.

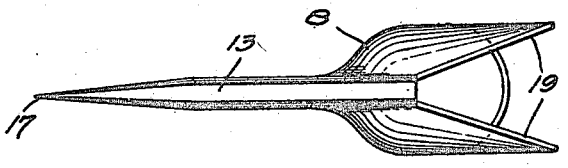


FIG. 4.

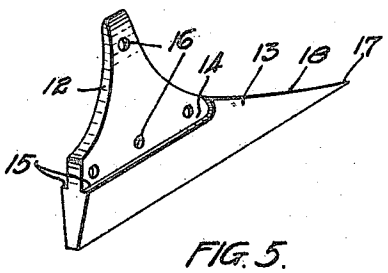


FIG. 5.

WITNESSES

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UNITED STATES PATENT OFFICE.

HARDY WEBSTER CAMPBELL, OF LINCOLN, NEBRASKA.

GRAIN SHOE.

1,416,331. Specification of Letters Patent. Patented May 16, 1922.

Application filed February 28, 1918. Serial No. 219,658.

To all whom it may concern:

Be it known that I, HARDY W. CAMPBELL, a citizen of the United States, resident of Lincoln, county of Lancaster, State of Nebraska, have invented certain new and useful Improvements in a Grain Shoe, of which the following is a specification.

My invention relates to improvements in shoes for grain drills and the primary object of the invention is to improve the construction of the shoe shown and described in my pending application for Letters Patent of the United States No. 844,881, filed June 13, 1914.

The invention consists generally in various constructions and combinations, all as hereinafter described and particularly pointed out in the claims.

In the acompanying drawings forming part of this specification,

Figure 1 is a side elevation of a disc and shoe embodying my invention,

Figure 2 is a horizontal sectional view of the same,

Figure 3 is a rear elevation with a portion of the boot broken away,

Figure 4 is a bottom view of the shoe and boot,

Figure 5 is a perspective view of the shoe removed from the boot.

In the drawing, 2 represents drag bars having bearings for a disc 3. The drag bars have horizontal extensions 4 projecting rearwardly from the axis of the disc 3, and provided with curved end portions 5 having bolts 6 and 7 for clamping said curved end portions around the drill boot 8. This boot is preferably formed of sheet steel folded, substantially oval, in cross section, having its abutting edges riveted together as at 9, and connected with the axis of the disc 3 by suitable brace bars 10. The lower end of the boot on the forward side has wings 11 formed thereon between which a tongue 12 formed on the upper portion of a shoe 13 is inserted. This tongue is preferably tapered and the shoe near the base of the tongue is recessed, preferably, as at 14, forming shoulders 15 against which the lower edges of the wings 11 are seated, holes 16 being provided in the tongue to receive rivets which pass through the wings and through the tongue and secure the shoe firmly in the boot The shoe is preferably made of a drop forging and has an elongated toe 17 provided with an upper surface 18 which merges into the curved forward edges of the wings 11 to present as little obstruction as possible for the collection of weeds, corn butts and the like.

I have found by mounting the shoe in the boot in the manner described that the toe of the shoe when the boot is mounted in the machine will always be in alignment with or in the plane of the disc, as the wings 11, pressed from the walls of the boot, will be in the same relative position and the shoe in all cases will stand at substantially the same angle to the boot whereas, in a cast construction of boot, there is so much variation in the casting that it is difficult to always get the point or toe of the shoe in the proper position with respect to the edge of the disc. This difficulty I have entirely avoided by my improved construction.

The rear end of the shoe terminates at a point beneath the middle portion of the boot, as indicated in Figure 1, and the lower portion of the shoe is tapered or wedge-shaped from a point near the wings to the lower edge of the shoe, and the shoe perferably is tapered from the rear toward the front so that it offers a minimum of resistance to its movement through the soil and has a tendency to work the soil outwardly on each side of the shoe preparatory to the dropping of the grain in the little furrow or crevice made by the disc and shoe.

The function of the disc is to form the crevice in the soil, as described in my application above referred to, while the shoe, pressing against the walls of the crevice, has a tendency to pack the same, thereby obtaining a compact soil condition favorable to carrying a high percentage of water as well as producing a more rapid growth of rootlets. The wedge shape of the lower portion of the shoe will form a correspondingly shaped crevice, packing the walls so that the deposit of grain will reach the bottom of the crevice. The lower edge of the shoe is substantially straight and flat, so that when it is forced down into the soil it will form a crevice that is flat at the bottom and the soil will be compressed and packed down by this flat lower edge and form a suitable bed for the seed.

I prefer to provide wings 19 on the lower rear portion of the boot, preferably by cutting the walls of the boot horizontally and vertically and bending the edges of the portions so cut outwardly to form guiding wings

to prevent the dirt from falling into the crevice, as well as direct the grain into the crevice immediately in the rear of the shoe. As set forth in my former application, the point of the toe of the shoe is sufficiently near the disc to prevent weeds or waste material from collecting between the disc, and the point or the toe of the shoe is preferably higher than the heel to eliminate as much as possible the resistance to the movement of the shoe through the soil.

I claim as my invention:

1. In combination, with a grain boot, a shoe having a shank adapted for insertion between the walls of the boot and secured thereto, said shoe comprising a blade having a straight flattened bottom, and flat side surfaces converging toward said bottom for packing the bottom and side walls of said crevice.

2. In combination, with a grain boot having forwardly and downwardly extending wings, a grain shoe comprising a blade having a shank fitting between said wings and secured thereto and shoulders against which the edges of said wings are seated, with the surfaces of the wings flush substantially with the side surfaces of the shoe and said shoe having a flat lower surface for packing the bottom of the seed crevice, and side walls for packing the walls of the crevice.

3. A grain boot composed of sheet metal having its longitudinal edges folded and secured together, the lower forward portion of said boot having wings formed therein and a shoe having a shank fitting between said wings and secured thereto and extending downwardly and forwardly therefrom, for the purpose specified.

4. A grain boot composed of sheet metal having its longitudinal edges folded and secured together, the lower forward portion of said boot having wings formed thereon, a grain shoe having its upper portion seated between said wings and secured thereto, the lower portion of said shoe being adapted to pack the bottom and walls of the seed crevice and said boot having rearwardly projecting wings formed thereon for directing the seed to the rear of said shoe.

In witness whereof, I have hereunto set my hand this 2nd day of February, 1918.

HARDY WEBSTER CAMPBELL.